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Is it iron or potassium deficiency?

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INTEGRATED CROP MANAGEMENT

Is it iron or potassium deficiency?

Cool early summer temperatures have promoted symptom development of soybean iron chlorosis in some parts of Iowa, according to reports from Iowa State University field crop specialists and samples submitted to the Iowa State University Plant Disease Clinic. Yellowing soybean caused by iron chlorosis was a problem last growing season, and it may be a problem again for some growers this season.

Soybean with iron chlorosis usually first shows up in low and wet areas of soybean fields. These fields often have high pH (greater than 7) and poor drainage. Patches of soybean may turn yellow in low areas. Symptoms of iron chlorosis are yellowing of the interveinal area of young leaves. Brown and necrotic spots may occur in leaf margins, and plants can be stressed or killed if the disease is severe. The symptoms are more pronounced when soil temperature is low and soil moisture is high.

Potassium deficiency, indicated by lower leaf with outer margin yellowing.

Enlarge [1]

Iron deficiency, indicated by upper leaf with interveinal chlorosis.

Enlarge [2]

Often, plants with iron chlorosis also suffer from fungal root rot problems or soybean cyst nematodes. If plants with iron chlorosis have root rot, their taproots have a dark brown or reddish brown discoloration. Several fungi can be isolated from these plants, with *Fusarium* species the most common. In this type of situation, fungal infection is enhanced because soybean plants are more susceptible to fungal infection when plants are weakened by iron deficiency.

Iron chlorosis is a physiological disease and a major disease in central and northern Iowa. In soybean fields, there is plenty of iron in soils. But iron becomes unavailable to soybean when soil pH is high, resulting in iron deficiency. High pH is favored by soybean cyst nematode, which may be a reason why cysts of soybean cyst nematodes often are found on plants showing iron chlorosis symptoms.

If iron chlorosis is a problem in your fields, consider management options in next season's crop. Varieties differ in response to iron chlorosis; some varieties are tolerant to the condition and yield much better in fields with high pH. If root rot is severe, consider cultivation to promote regrowth of new roots. Application of iron is also an option, but it may not be applicable to most growers for economic reasons.

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